

What is claimed is:

- 1 1. A method for forming optical fiber preforms, comprising steps of:
2 providing a first plasma torch having a coil for coupling plasma energy,
3 said coil having a first diameter;
4 providing a plurality of targets, each having a longitudinal axis,
5 arranged such that said longitudinal axes are separated from one another by
6 a spacing distance normal to said longitudinal axes;
7 rotating said plurality of targets simultaneously about mutually parallel
8 axes of rotation;
9 depositing a glass simultaneously on said plurality of targets, using
10 said first plasma torch, to form a plurality of intermediate preforms each
11 having a first preform diameter;
12 providing a plurality of second plasma torches, each having a coil for
13 coupling plasma energy, each of said coils having a second diameter, said
14 second diameter being smaller than said first diameter; and
15 depositing a glass on said plurality of intermediate preforms using said
16 plurality of second plasma torches to form a corresponding plurality of final
17 preforms.
- 1 2. A method according to claim 1, wherein a sum of said spacing
2 distances of all adjacent pairs of said targets is less than said first coil
3 diameter.
- 1 3. A method for forming optical fiber preforms, comprising steps of:
2 providing a plurality of targets;
3 rotating said plurality of targets simultaneously about mutually parallel
4 axes of rotation;
5 providing a first plasma torch having a coil for coupling plasma energy,
6 said coil having a first diameter;
7 depositing glass on said targets by moving said first plasma torch
8 along said targets parallel to said axes of rotation;

9 providing a second plasma torch having a coil for coupling plasma
10 energy over a portion of each of said plurality of targets, said coil having a
11 second diameter, said second diameter being greater than said first diameter;
12 and
13 depositing glass on said targets by moving said second plasma torch
14 along said targets parallel to said axes of rotation.

1 4. A method for forming optical fiber preforms, comprising steps of:
2 providing a first plasma torch having a coil for coupling plasma energy,
3 said coil having a first diameter;
4 providing a plurality of targets, each having a longitudinal axis,
5 arranged such that said longitudinal axes are separated from one another by
6 a spacing distance normal to said longitudinal axes;
7 rotating said plurality of targets simultaneously about their respective
8 longitudinal axes;
9 depositing a glass simultaneously on said plurality of targets, using a
10 plasma torch;
11 detecting a diameter of one or more of said targets;
12 increasing said spacing in response to said detected diameter; and
13 depositing a glass simultaneously on said plurality of targets with their
14 longitudinal axes separated from one another by said increased spacing.

1 5. A method for forming optical fiber preforms, comprising steps of:
2 providing one plasma torch having a coil for coupling plasma energy ,
3 said coil having a fixed diameter;
4 providing a plurality of targets, each having a longitudinal axis,
5 arranged such that said longitudinal axes are separated from one another by
6 a spacing distance normal to said longitudinal axes;
7 rotating said plurality of targets simultaneously about their respective
8 longitudinal axes;
9 depositing a glass simultaneously on said plurality of targets, using a
10 plasma torch;

- 11 detecting a diameter of one or more of said targets;
- 12 increasing said spacing in response to said detected diameter;
- 13 modifying the plasma torch by increasing the cross section area of the
- 14 plasma torch and keeping the surface velocity constant; and
- 15 depositing a glass simultaneously on said plurality of targets with their
- 16 longitudinal axes separated from one another by said increased spacing.